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Article

Applying Cooperative Learning by A.L.A.M (Amati, Lakukan, Analisis, Mengkreasi) to Students Learning Outcomes on Junior High School

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ABSTRACT

The background of this research was the low student learning outcomes in science material, especially the concepts of vibration and waves. This research aims to improve the learning outcomes of students in Junior High School through the using of A.L.A.M (*Amati, Lakukan, Analisis, Mengkreasi*). cooperative learning model. This research is a Classroom Action Research where researchers work with physics teachers as observers. The research subjects were 32 students of class VIII A at State Junior High School, Merakurak Tuban. The techniques used in data collection are observation and tests. The data analysis technique used is quantitative descriptive analysis to analyze the results of the final test of each cycle and qualitative descriptive analysis to observe the results of each cycle. The research was carried out in 2 cycles and each cycle was carried out in 2 actions. The results showed that using of A.L.A.M cooperative learning model in science learning could improve student learning outcomes. This is indicated by an increasing in the value of student learning outcomes in pre-cycle to cycle II. In cycle, I, the average score obtained by students was 71.88 while in cycle II, the average value obtained by students reached 73.59. In conclusion, the using of A.L.A.M cooperative learning model (*Amati, Lakukan, Analisis, Mengkreasi*) can improve the learning outcomes of students.

INTRODUCTION

Natural Science subjects do not only contain a collection of knowledge in the form of facts, concepts, or principles, but also a process of discovery. Science learning in schools is expected to be a vehicle for students to learn about themselves and the environment, as well as prospects for further development in applying it in everyday life. So that the learning process emphasizes giving direct experience to develop competencies so that students can explore and understand the natural surroundings scientifically(SEPTINA, 2013).

The process of learning science, especially the concept of physics that occurs at SMP Negeri 1 Merakurak Tuban, especially in class VIII C, mostly shows that student learning outcomes are still low and physics learning activities are still considered less exciting. This is shown by a less enthusiastic attitude when the lesson takes place, and the low feedback

response from students to the teacher's questions because many do not pay enough attention when learning physics takes place. This is in line with the opinion(GUNIBALA, 2017), states that science learning is still not effective and meaningful, so teachers must use learning innovations that can improve student learning outcomes, especially physics concepts. Paying attention to the symptoms above, as a teacher who plays a role in the learning process, he should try to find solutions to improve physics learning outcomes by providing variations of learning models that involve students actively and fun(Batubara & Sinulingga, 2014).

Teachers should be able to overcome student learning problems continuously through interesting approaches, methods, and techniques or learning strategies to develop students' potential optimally. One learning approach to developing students' potential is to apply a constructivist learning approach(Ahmad, 2017). The constructivist theory views students as regularly matching new information with old rules and revising the rules when they no longer fit. According to Slavin (1994) in (Ekawati, 2019) , teachers can provide students with stairs that bring students a higher understanding with notes that students themselves have to climb the stairs.

The learning strategy that can be developed is by applying the cooperative learning model. Cooperative learning is an effort to realize active, creative, effective and fun learning. Cooperative learning provides opportunities for students to interact with each other. Students who mutually explain the understanding of a concept to their friends are actually experiencing a very effective learning process that can provide far more optimal learning outcomes than if they listen to the teacher's explanation(Istiana et al., 2016). The cooperative learning model is a collaborative model so students can easily understand and master physics concepts and apply them in everyday life. In another study, cooperative learning is a group learning model between four to six people in which there is a process of working together to solve problems, complete tasks or achieve common goals where each individual has responsibility for his own learning and there is encouragement to improve the learning of his members. other members(Nuraini et al., 2018).

Based on experience and reality while being a teacher at Merakurak 1 Public Middle School, students still have difficulty understanding Vibration and Wave learning material, even though Vibration and Waveform material is the basis for students to learn the principles of Vibration and Waves at a higher level. So in this case, to solve this problem the author tries to apply a A.L.A.M cooperative learning model. It is a modified model of the author in which learning is carried out in the following steps: (1) Observe; (2) Do; (3) Analysis; and (4) Creating. The scheme of implementing learning with the A.L.A.M cooperative learning model can be described as follows: (1) Observe: Each is given a Worksheet/LK for an experiment, then observes the components and experimental steps in the worksheet; (2) Do: With the group experimenting in collaboration while discussing; (3) Analysis: After the experiment was over, each group analyzed by looking for relationships, comparing and rearranging the results of the experiment; (4) Creating: The experimental results obtained or found were then created by designing and pasting them on BC paper and then displaying them for discussion/ class presentation.

The A.L.A.M cooperative learning model has the characteristics of being able to arouse student activity and can bring out students' cooperative skills. In carrying out this learning model, teachers are required to be able to master class management, especially in forming groups. Based on constructivism students are expected to learn by 'experiencing', not 'memorizing'. Knowledge is not a set of facts and concepts that are readily accepted, but "something" that students must construct so that it becomes more meaningful. After later applying the A.L.A.M-oriented cooperative learning model, it is hoped that student learning outcomes will be better and improve compared to before. Learning achievement itself is

mastery of knowledge or skills developed by subjects, usually indicated by test scores or scores given by the teacher (WJS. Poerwadar Minta, 1991: 787) in(Kurniawan, 2019).

Learning achievement can also be interpreted as the result of an activity that has been done and created, both individually and in groups (Sagala, 2005: 19) in(Sagala, 2013). Learning achievement will not be achieved by someone if that person does not carry out a learning activity. From some of the descriptions above, according to the authors, learning achievement is the result obtained from an activity (process) that can cause changes in behavior in individuals. Learning achievement requires a certain measurement to measure the level of success of learning. This measurement became known as the Learning Achievement Test. The learning achievement test is in the form of a planned test to reveal the subject's maximum performance in mastering the material being taught. In formal education in the classroom, learning achievement tests can take the form of daily tests, formative tests, summative tests, and even national final exams.

METHODS

This type of research is classroom action research (CAR) to improve student learning outcomes, especially on vibration and wave material. Classroom action research consists of stages of action research, namely research conducted by teachers in classrooms or at schools where they teach, with an emphasis on perfecting or improving practices and processes in learning (Susilo, 2009: 16) in(Al Majid, 2015). The CAR model that will be developed in this study is the spiral model from Kemmis and Taggart. Kemmis & Taggart's design includes several cycles, each consisting of the following stages: planning (plan). Implementation and observation (act & observe), and reflection (reflect). These stages take place repeatedly until the research objectives are achieved.(Gaffar, 2018). The research steps taken in each cycle are explained in detail (Arikunto, 2021) including a) the planning stage (planning); b) the implementation stage (acting); c) the Observing stage; d) the Reflection (reflecting).

The research was carried out at SMP Negeri 1 Merakurak Tuban in class VIII A students with a total of 32 students in the 2021/2022 academic year. The reason for this choice was, firstly, the author's place of duty was at SMP Negeri 1 Merakurak Tuban, making it easier for research. The collaborator who accompanied the researcher was a physics teacher at SMP Negeri 1 Merakurak Tuban. The time for conducting research is in the even semester of the 2021/2022 Academic Year January, the first week until mid-March 2022. The first week is used to develop a research plan. The next six weeks are used for the research phase (action implementation). Then the following two weeks were used to prepare written reports. The research instruments used in this classroom action research were: Learning Achievement Test Sheets, Student Activity Observation Sheets in KBM, and Student Response Questionnaire Sheets. This classroom action research uses 2 cycles. The implementation of each cycle follows the following flow:

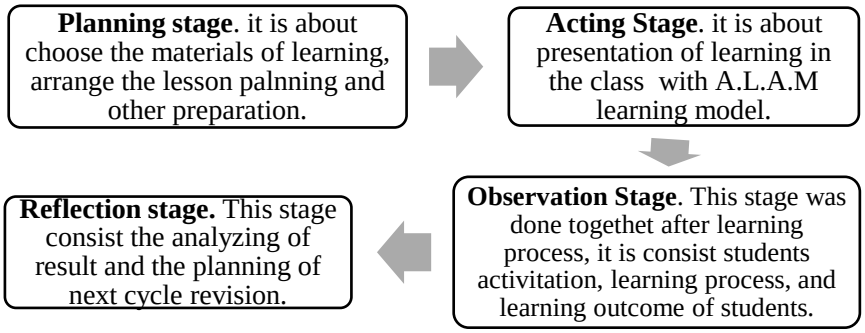

Figure 1. Research Diagram

RESULTS AND DISCUSSION

Based on the stages of research in the research method that has been described, learning activities (student and teacher activities) are obtained as in the following table.

Tabel 1. Students Activity of the teacher and Students at Cycle I and II

No	Learning Stage	Time	Teacher Activity	Student Activity
1	Opening the learning	10’	Conditioning students with the arrangement and management of early learning activities; Conveying a discussion, followed by Apperception, providing motivation, and conveying learning objectives	Interpretating the information from the teacher about: Restriction subject relation Motivation Learning aims Attentioning and self preparationing
2	Core Activity Group Formed	60’	Explain the stage of **A.L.A.M** model Dividing the studens (32) into 6 group	Pay close attention, then place yourself according to the group determined by the teacher
	”Amati” stage		Dividing students sheet, materials and tool of experiment, and giving the explanation of the using tools	All groups observed the explanation with great attention about the using of experiment tools and read the experiment instructions
	”Lakukan” stage		Instructing every group to do experiment activity.	
	”Analisis” stage		Guiding the process of experiment, helping the group that still confused about subject Instructing the group to analyze result data of the experiment	After observing all groups carry out experiment according to the procedure and work together to help each other according to their duties.
	”Mengkreasi” stage		Instructing to desain experiment result and by take to the BC paper then presented to present with other group Command and guide in discussing of the class	Students discuss in their groups to analyze by connecting/associating with the theory obtained Each group designs the practicum results and attaches them to BC paper, then displays the results in designated places. Then class presentation.
3	Closing of learning	10’	Facilitate the conclusion processing Giving the post test Giving the task Greeting	Participate the students to make conclusion Answering the teacher’s question Note the task that given from teacher Answer the greeting
	Time Number	80’		

Data presentation as a result of process observations and findings on the implementation of the A.L.A.M cooperative learning model (*Amati, Lakukan, Analisis, Mengkreasi*) in class VIII A students with a total of 32 students in the 2021/2022 academic

year is presented in a descriptive form. Learning activities in this study were divided into 2 cycles, each cycle divided into two meetings. Each meeting is 2 x 40 minutes. The lesson from both cycles is to describe the various systems in humans. In cycle, I, meeting 1, the learning material is "Vibration". The researcher prepares a lesson plan that contains materials or material to be presented to students, then divides the group into 6 groups. Then, with the help of collaborators, they distributed worksheets to each group. After students pay attention to the information provided by the teacher by observing the worksheets that have been divided, then each group conducts experiments according to the worksheets and analyzes the results, and creates creations by sticking them on BC paper and displaying them on the display board or the place prepared. In meeting 2, Each group presented the results of the practicum that had been created for class discussion in turn.

In cycle II, learning is the same as the implementation of learning in cycle I, namely using the " A.L.A.M" cooperative learning model (*Amati, Lakukan, Analisis, Mengkreasi*). However, based on the findings in the form of weaknesses and deficiencies in the results of the first cycle of reflection, improvements were made in cycle II. Especially optimizing student involvement both when analyzing, creating, and presenting as well as time control is very important. Meeting 1, In this cycle, the experimental material is "Wave". The researcher prepares a lesson plan that contains materials or material to be presented to students, then divides the group into 6 groups.

Then, with the help of collaborators, they distributed worksheets to each group. After students pay attention to the information provided by the teacher by observing the worksheets that have been divided, then each group conducts experiments according to the worksheets and analyzes the results, and creates creations by sticking them on BC paper and displaying them on the display board or the place prepared. This A.L.A.M cooperative learning model has the characteristics of being able to arouse student activity and can bring out students' cooperative skills. In carrying out this learning model, teachers are required to be able to master class management, especially in forming groups. Based on constructivism students are expected to learn by 'experiencing', not 'memorizing'. In meeting 2, Each group presented the results of the practicum that had been created for class discussion in turn. This activity same with statement that the cooperative learning model is a collaborative model so students can easily understand and master physics concepts and apply them in everyday life. In another study, cooperative learning is a group learning model between four to six people in which there is a process of working together to solve problems, complete tasks or achieve common goals where each individual has responsibility for his own learning and there is encouragement to improve the learning of his members. other members(Nuraini et al., 2018)

Data presentation as a result of process observations and findings on the implementation of the "A.L.A.M" learning model in class VIII A students with a total of 32 students in the 2021/2022 academic year is presented in a descriptive form. Learning activities in this study were divided into 2 cycles, each cycle divided into two meetings. Each meeting is 2 x 40 minutes. The lesson from both cycles is to describe the various systems in humans. In cycle, I, meeting 1, the learning material is "Vibration". The researcher prepares a lesson plan that contains materials or material to be presented to students, then divides the group into 6 groups. Then, with the help of collaborators, they distributed worksheets to each group. After students pay attention to the information provided by the teacher by observing the worksheets that have been divided, then each group conducts experiments according to the worksheets and analyzes the results, and creates creations by sticking them on BC paper and displaying them on the display board or the place prepared. In meeting 2, each group presented the results of the practicum that had been created for the class discussion in turn.

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Learning Outcomes of Students

Assessment of learning outcomes as a form of increasing student achievement, with the "A.L.A.M" learning model is presented in the following table.

Tabel 2. Improvement data of Students Learning Achievement

Group	The average every cycle						Increasing Average
	Cycle I			Cycle II			
	Meeting I	Meeting II	I and II	Meeting I	Meeting II	I and II	
1	71,8	73	72,42	73,8	74,8	74,33	1,91
2	72,8	74,3	73,58	74,8	76	75,42	1,84
3	70,6	71,6	71,51	72	73,2	73,07	1,56
4	71,7	72,7	72,17	73	73,7	73,33	1,16
5	71	71,6	71,3	72,8	74	73,4	2,1
6	71,2	72,6	71,8	73,2	74	73,57	1,77
Average	**71,52**	**72,63**	**71,88**	**73,28**	**74,28**	**73,59**	1,71

The following can be seen as a graph of the average increase over the two cycles.

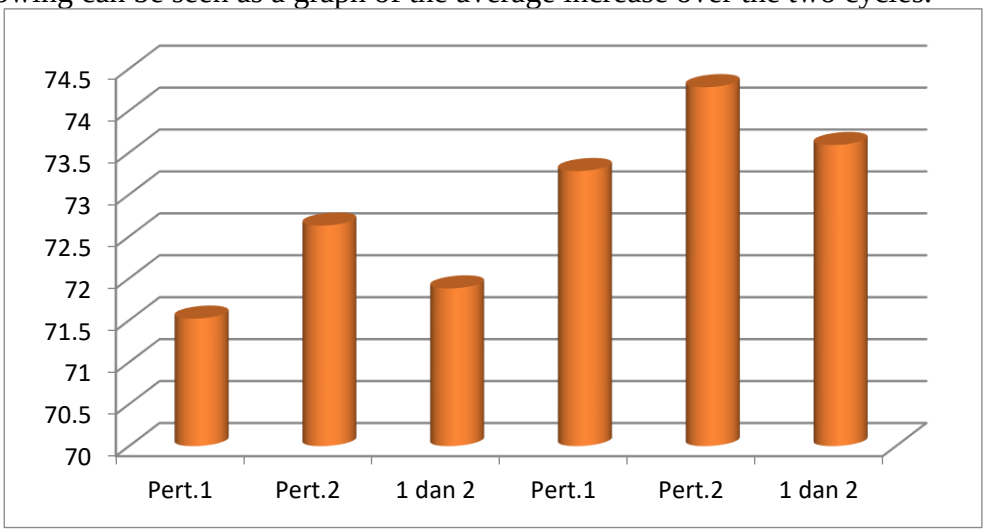

Figure 2. Improvement Data of Students Learning Achievement

Based on the research results it is known that the success of learning to improve student achievement in the "Vibration" experiment through the "A.L.A.M" learning model is very effective and has increased. The increase in student learning achievement was manifested by the achievement of student learning outcomes with an average overall score obtained in cycle I, meeting 1 and 2 was 71.88 increasing to 73.59 meetings 1 and 2 in cycle II. This increase is the effect of a well-managed student learning process through the implemented " A.L.A.M " learning model.

Students Activity

Assessment of student activities based on the overall procedure for learning activities designed in the " A.L.A.M " learning model after being implemented shows an increase. This

increase is in the form of the frequency of students' active involvement in learning. Data on the increase in activity is presented in table 5.

Tabel 3. Percentage of Students Activity during Learning

Indicator of Students Activity	Siklus	
	I	II
Observation of teacher modelling	70,5	78,5
Doing work sheet based on procedure	72,4	82,4
Discussing with other groupBerdiskusi dengan teman dan kelompok	72,6	80,8
Creating/Desaining and presenting the experiment result	73,5	80,2
Being presenter	73,2	80,7

Based on the table above, this is a following graphic.

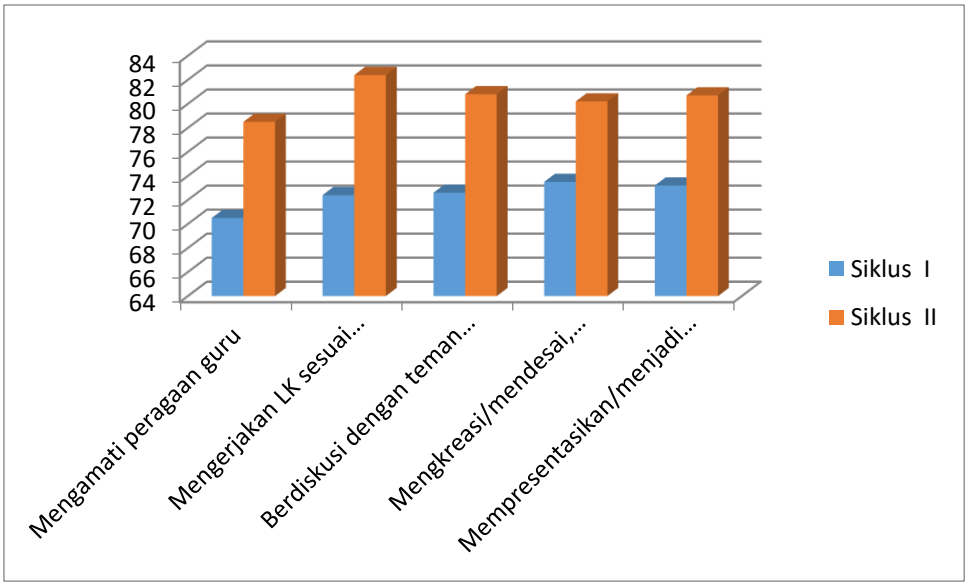

Figure 3. Percentage of Students Activity during Learning

The activity and enthusiasm of students in teaching and learning showed an increase in the achievement of learning completeness and student absorption. Several aspects that show student activity (working on worksheets, asking friends, responding to questions from friends/teachers, and becoming presenters) all tend to increase. This is the main principle expected by the " A.L.A.M " Learning model. On the other hand, some student activities that "depend on the teacher" (listening to the teacher's explanation, taking notes, and asking questions/discussing with the teacher) tend to decrease. This shows that student activity is increasing and the teacher's role can be reduced. The advantages of applying the " A.L.A.M " learning model according to observations of teacher activities can be described as follows:

1. The time used by the teacher to divide the group and the explanation of the A.L.A.M L" learning model from the first cycle is getting smaller. This shows that students' understanding of the " A.L.A.M " learning model is getting better in the second cycle.
2. The delivery of material using the lecture method is decreasing in frequency. This is following the expectations of the " A.L.A.M " Learning model
3. The teacher's activity in giving instructions/guiding activities tends to decrease. This is the hope of implementing the " A.L.A.M " Learning model

CONCLUSION

Based on the review of the results of the research and discussion that has been presented, it can be concluded as a finding that with the application of the " A.L.A.M " Learning Model student learning outcomes have increased. In addition, the " A.L.A.M "

learning model is very effective for involving students actively in the learning process. All students compete to complete the Student Worksheet perfectly. It's good when giving detailed explanations because you want to appear satisfactory in front of your classmates. Collaboration between students is fostered conducive, seen from the involvement of group roles to motivate group members. Students with high academic abilities help other students, while those with moderate and low abilities are motivated to perform as best they can.

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